Request for Quote

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ONE CAPITOL HILL
PROVIDENCE RI 02908

CREATION DATE : 13-MAY-11
BID NUMBER: 7448668
TITLE: ELECTRONIC THEATRE CONTROL PRODIGY HOIST AND INSTALLATION - RIC

BID CLOSING DATE AND TIME:20-JUN-2011 01:00:00

BUYER: Mosca, Gary
PHONE #: 401-574-8124

BILL TO
RIC-PURCHASING
600 MOUNT PLEASANT AVENUE
PROVIDENCE, RI 02908
US

SHIP TO
RIC SPECIAL INSTRUCTIONS
SEE BELOW
SEE BELOW, RI N/A
US

Requistion Number: 1222492

Line	Description	Quantity	Unit	Unit Price	Total
	THERE WILL BE A PRE BID CONFERENCE HELD JUNE 3RD, 2011 @ 11:00 AM LOCATION: RHODE ISLAND COLLEGE 600 MT. PLEASANT AVE PROVIDENCE RI PLEASE REPORT TO THE PHYSICAL PLANT DIRECTORS OFFICE IT IS HIGHLY RECOMMENDED ALL INTERESTED PARTICIPANTS ATTEND				
1	ETC PRODIGY HOIST - 1 ETC P1000E ETC PRODIGY FIXED SPEED HOIST W/ 43' CONNECTOR STRIP W/ 24 GPC OUTLETS WIRED ON 24-20A CIRCUITS, (3) DMX OUTPUTS AND (1) ETHERNET PORT. 1 SCHEDULE 40 1.5" DIAMETER SCHEDULE 40 PIPE BATTEN AND 1 ETC QT4	1 00	Each		

Delivery: _____

Terms of Payment: _____

It is the Vendor's responsibility to check and download any and all addenda from the RIVIP This offer may not be considered unless a signed RIVIP generated Bidder Certification Cover Form is attached and the Unit Price column is completed The signed Certification Cover Form must be attached to the front of the offer

Contract Terms and Conditions

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Terms and Conditions

BID STANDARD TERMS AND CONDITIONS

TERMS AND CONDITIONS FOR THIS BID

AWARD

THE STATE, AT ITS SOLE DISCRETION, SHALL RESERVE THE RIGHT TO MAKE ONE OR MULTIPLE AWARDS FOR THIS REQUIREMENT AND/OR TO REJECT ANY OR ALL BIDS

START DATE

STARTING DATE _____ NO OF WORKING DAYS REQUIRED FOR COMPLETION _____

INSPECTION REQUIREMENTS

BIDDERS ARE RESPONSIBLE FOR INSPECTION OF EQUIPMENT AND/OR LOCATION, TAKING MEASUREMENTS* WHEN REQUIRED, AND MAKING THEMSELVES AWARE OF THE TOTAL REQUIREMENT BEFORE SUBMITTING A BID *MEASUREMENTS PROVIDED WITH ANY BID ARE FOR REFERENCE PURPOSES AND ARE NOT GUARANTEED TO BE COMPLETELY ACCURATE

INSURANCE REQUIREMENTS

AN INSURANCE CERTIFICATE IN COMPLIANCE WITH PROVISIONS OF ITEM 31 (INSURANCE) OF THE GENERAL CONDITIONS OF PURCHASE IS REQUIRED FOR COMPREHENSIVE GENERAL LIABILITY, AUTOMOBILE LIABILITY, AND WORKERS' COMPENSATION AND MUST BE SUBMITTED BY THE SUCCESSFUL BIDDER(S) TO THE DIVISION OF PURCHASES PRIOR TO AWARD THE INSURANCE CERTIFICATE MUST NAME THE STATE OF RHODE ISLAND AS CERTIFICATE HOLDER AND AS AN ADDITIONAL INSURED. FAILURE TO COMPLY WITH THESE PROVISIONS MAY RESULT IN REJECTION OF THE OFFEROR'S BID. ANNUAL RENEWAL CERTIFICATES MUST BE SUBMITTED TO THE AGENCY IDENTIFIED ON THE PURCHASE ORDER FAILURE TO DO SO MAY BE GROUNDS FOR CANCELLATION OF CONTRACT.

NOTE: IF THIS BID COVERS CONSTRUCTION, SCHOOL BUSING, HAZARDOUS WASTE, OR VESSEL OPERATION, APPLICABLE COVERAGES FROM THE FOLLOWING LIST MUST ALSO BE SUBMITTED TO THE DIVISION OF PURCHASES PRIOR TO AWARD: * PROFESSIONAL LIABILITY INSURANCE (AKA ERRORS & OMISSIONS) - $1 MILLION OR 5% OF ESTIMATED PROJECT COST, WHICHEVER IS GREATER * BUILDER'S RISK INSURANCE - COVERAGE EQUAL TO FACE AMOUNT OF CONTRACT FOR CONSTRUCTION. * SCHOOL BUSING - AUTO LIABILITY COVERAGE IN THE AMOUNT OF $5 MILLION * ENVIRONMENTAL IMPAIRMENT (AKA POLLUTION CONTROL) - $1 MILLION OR 5% OF FACE AMOUNT OF CONTRACT, WHICHEVER IS GREATER * VESSEL OPERATION - (MARINE OR AIRCRAFT) - PROTECTION & INDEMNITY COVERAGE REQUIRED IN THE AMOUNT OF $1 MILLION

LICENSE REQUIREMENTS

VENDOR (OWNER OF COMPANY) IS RESPONSIBLE TO COMPLY WITH ALL LICENSING OR STATE PERMITS REQUIRED FOR THIS TYPE OF SERVICE. A COPY OF LICENSE/PERMIT SHOULD BE SUBMITTED WITH THIS BID IN ADDITION TO THESE LICENSE REQUIREMENTS,

BIDDER, BY SUBMISSION OF THIS BID, CERTIFIES THAT ANY/ALL WORK RELATED TO THIS BID, AND ANY SUBSEQUENT AWARD WHICH REQUIRES A RHODE ISLAND LICENSE(S), SHALL BE PERFORMED BY AN INDIVIDUAL(S) HOLDING A VALID RHODE ISLAND LICENSE

RIVIP INFO - BID SUBMISSION REQUIREMENTS

It is the Vendor's responsibility to check and download any and all addenda from the RIVIP This offer may not be considered unless a signed RIVIP generated Bidder Certification Cover Form is attached and the Unit Price column is completed. The signed Certification Cover Form must be attached to the front of the offer When delivering offers in person to One Capitol Hill, vendors are advised to allow at least one hour additional time for clearance through security checkpoints

VENDOR SPECIFICATIONS

ALL VENDORS MUST INCLUDE SPECIFICATIONS WITH BID PROPOSAL (EVEN THOSE BIDDING BRAND SPECIFIED) FAILURE TO SUBMIT SPECIFICATIONS WITH BID PROPOSAL MAY RESULT IN DISQUALIFICATION OF BID. ITEMS IN CATALOGS MUST BE CLEARLY MARKED AND PAGES TABBED.

WAGE REQUIREMENTS

BIDDERS ARE ADVISED THAT ALL PROVISIONS OF TITLE 37 CHAPTER 13 OF THE GENERAL LAWS OF RHODE ISLAND APPLY TO THE WORK COVERED BY THIS REQUEST, AND THAT PAYMENT OF THE GENERAL PREVAILING RATE OF PER DIEM WAGES AND THE GENERAL PREVAILING RATE FOR REGULAR, OVERTIME, AND OTHER WORKING CONDITIONS EXISTING IN THE LOCALITY FOR EACH CRAFT, MECHANIC, TEAMSTER, OR TYPE OF WORKMAN NEEDED TO EXECUTE THIS WORK IS A REQUIREMENT FOR BOTH CONTRACTORS AND SUBCONTRACTORS. THE PREVAILING WAGE TABLE MAY BE OBTAINED AT THE RI DIVISION OF PURCHASES HOME PAGE BY INTERNET at www.purchasing.state.ri.us SELECT "INFORMATION" AND THEN SELECT "PREVAILING WAGE TABLE". THE STATE OF RHODE ISLAND USES THE GENERAL DECISION NUMBER RI20100001 PRINTING THE ENTIRE DOCUMENT AVERAGES APPROXIMATELY ONE MINUTE PER PAGE - YOU MAY WANT TO PRINT ONLY THE PAGES APPLICABLE TO YOUR BID. BIDDERS NOTE: IN THE EVENT THIS BID SPECIFIES PRICE OFFERS ON A TIME-AND-MATERIALS BASIS, i.e , AN HOURLY RATE, ANY OR ALL BIDS SUBMITTED IN AN AMOUNT LESS THAN THE PREVAILING RATE IN EFFECT FOR THE WORK COVERED BY THIS REQUEST AS OF THE DATE OF BID ISSUANCE SHALL BE REJECTED BY THE DIVISION OF PURCHASES

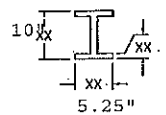
DELIVERY PER AGENCY

DELIVERY OF GOODS OR SERVICES AS REQUESTED BY AGENCY

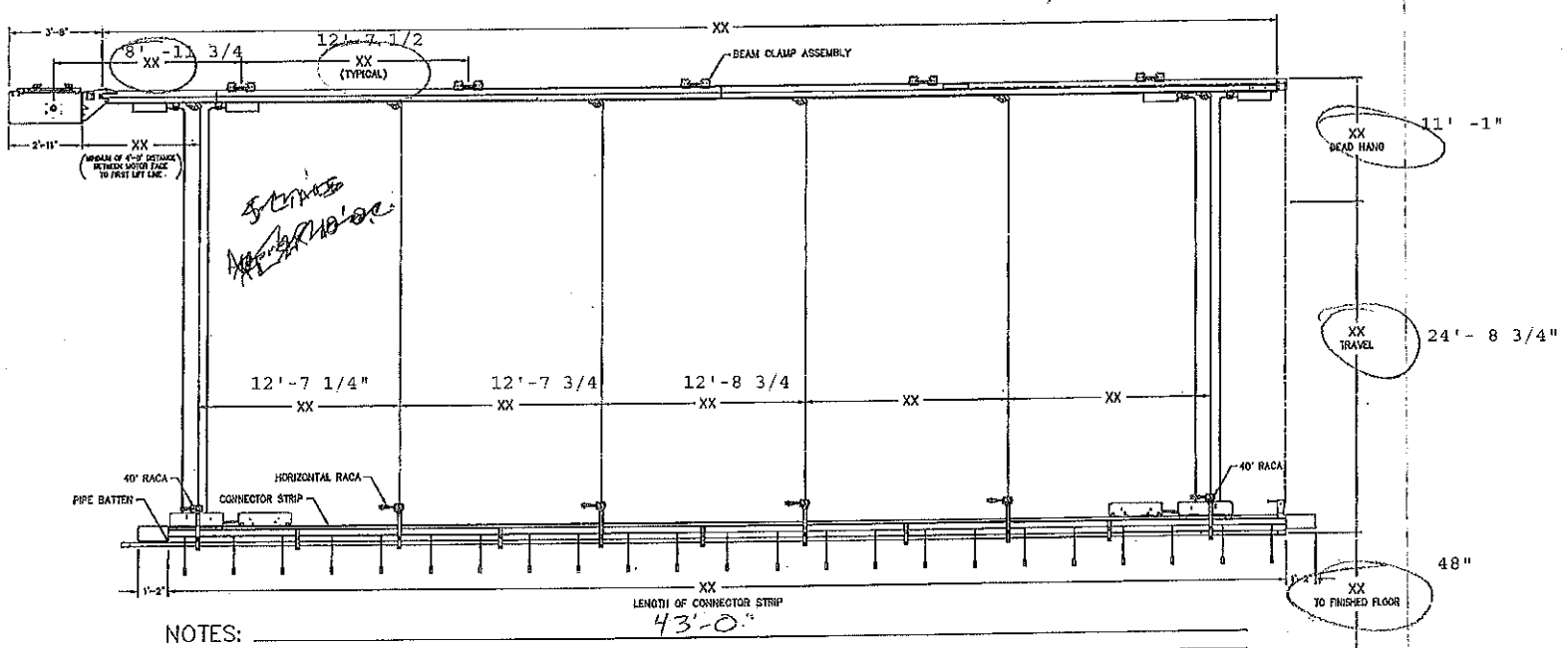
GUIDELINES:

1.) THIS DRAWING IS TO BE USED FOR QUOTATION INFORMATION PURPOSES ONLY.
2.) PLEASE FILL IN THE DIMENSIONAL INFORMATION WHERE INDICATED.
3.) THE MAXIMUM DISTANCE BETWEEN BEAM CLAMPS SHALL BE 14'-0".
4.) THE MAXIMUM DISTANCE BETWEEN LIFT LINES SHALL BE 12'-0".
5.) THE MAXIMUM TRAVEL DISTANCE IS 50'-0".
6.) QUANTITY OF LOFT BLOCKS RANGE FROM 4 TO 7 FOR ELECTRIC.
7.) THE DISTANCE FROM THE END OF THE BATTEN TO THE FIRST LIFT LINE MUST BE 3'-0" OR LESS.
8.) REQUIRED CM STRIP LENGTH FOR A SINGLE CM SYSTEM IS HALF THE TRAVEL DISTANCE OF THE BATTEN PLUS 5'-0". REQUIRED CM STRIP LENGTH FOR A DOUBLE CM SYSTEM IS THE TRAVEL DISTANCE OF THE BATTEN PLUS 11'-0".
9.) THE MINIMUM DISTANCE FROM THE END OF THE POWERHEAD TO THE WALL SHALL BE 18".

BEAM SIZE



HOIST POSITION/NAME: Electric
HOIST QUANTITY: 1
HOIST MODEL #: P1000E
QUICKTOUCH MODEL #: CS+4
QUICKTOUCH BACKBOX: _ FLUSH X SURFACE DOOR? _ YES X NO
QUANTITY OF E-STOP STATIONS (MAX. OF 3): 3
REMOTE CONTROL: _ YES X NO
QUANTITY OF BEAM CLAMPS: (1) MOTOR + __ BEAMS
CONNECTOR STRIP DETAILS: (24) 20 amp / (3) DMX / Dethumbed
QUANTITY OF CONNECTORS:
TYPE OF CONNECTOR(S): 20+G / DMX / RT. 45
FLUSH OR PIGTAIL: FLUSH
NUMBER OF CIRCUITS: 24
BATTEN BY ETC ? _ YES X NO LENGTH:
ANTICIPATED INSTALLATION DATE: July 2011



NOTES:

Part 1. General

SCOPE

A. The specification section covers the fabrication and operation of an Electronic Theatre Controls (ETC)™ Prodigy™ Hoist System and QuickTouch™ controller for

_____

B The system shall be manufactured by Electronic Theatre Controls and shall be installed by an ETC authorized and factory trained ETCP certified rigging installation contractor.

C. It is the intention of this specification that the Rigging Contractor provide complete and fully operational hoists and hoist control for this project. Incidental items not specifically called out but required to provide fully functional hoisting systems with control shall be provided by the Rigging Contractor under this specification and shall be included in any bid for this work.

1 The work shall be provided complete and the systems shall be fully operational as shown on the construction documents.

2. The work described herein shall be furnished and installed by one firm only

3. The specifications and drawings shall be read and used together. System features which are mentioned in the one are not necessarily shown in the other.

4. Field verify all dimensions prior to the fabrication of any elements of this hoisting system.

5 The electrical contractor shall provide wiring and terminations of power wiring. Electrical contractor is provided by OWNER.

6. The electrical contractor shall install conduit and pull the specified wire for all low voltage circuits.

SUBMISSIONS

D Drawings of the hoisting system and control system shall be submitted to document the primary elements of the system and to show all information necessary to fully explain the design features, appearance, function, fabrication and use of the system. A riser diagram shall be provided to explain the power and control wiring, wire selection and termination requirements. Drawings shall be approved before fabrication of any equipment shall begin.

E. The installing contractor shall provide an operations and maintenance manual including instructions on all of the features of the system, maintenance requirements, methods, materials and techniques.

F The installing contractor shall provide a minimum of four hours of instruction to a client or end user representative in the use and maintenance of the system.

G Within 90 days of acceptance of the system, the installing contractor shall provide a complete set of as-built drawings of the systems as installed

WARRANTY

H. Equipment provided by ETC shall be warranted by Electronic Theatre Controls against equipment failure. Repair or replacement shall be performed within 24 hours after being informed of a problem when life safety is a concern. All other warranty repairs shall be performed within a 30 day period.

I Warranty shall be in effect on materials and equipment for 3 years from the date of system commissioning. Maintaining the warranty in effect requires annual inspection of the system by an ETC trained and certified contractor. The warranty shall lapse after the first year of service in the absence of that annual inspection

J. Installation shall be warranted by the installing contractor as required by the project specifications.

Part 2. Products

PRODIGY LOW PROFILE HOIST

A. GENERAL

1 Prodigy Low Profile Hoists, as manufactured by Electronic Theatre Controls (ETC), shall be purpose-designed and fabricated for overhead lifting. The systems shall incorporate mechanical, electrical and safety features that shall be inherent to this equipment and shall provide an engineered, efficient device for overhead lifting. The mechanical, electrical and safety features of this hoisting and control system shall establish the standard of quality, performance and safety by which hoisting systems of other manufacture shall be evaluated.

2. Each wire rope lift line shall adhere to a design factor of 10:1 with an ultimate breaking strength of 4200 pounds. All load path components between the building structure and the batten shall exceed the ultimate breaking strength of the wire rope. The motor brake shall be rated at least at 150% of the motor torque.

3 Prodigy Hoist standard configuration:

a. P1000E electrics hoist capable of lifting 1000 pounds net Working Load Limit (WLL) in a standard configuration suspended from the batten and shall incorporate the Prodigy Cable Management system. Each Powerhead shall measure 16.13" wide, 14.53" high, and 47.5" long and weigh approximately 395 pounds. The Powerhead shall be equipped with a 1.5 horsepower gear motor Provide __1__ P1000E hoists

4. The standard hoist shall consist of the following major components:

a. Powerhead

b. Compression Tube with beam clamps, Cable Management system on "E series" hoists, s, lift lines terminated at the Powerhead and reeved through the loftblocks, lift line terminations including one Right Angle Cable Adjuster (RACA), oval compression sleeve and thimble per lift line

c. Pipe batten with end caps and load labels

d. Power/control distribution strip on "E series" hoists

5 Each hoisting system shall include the following features:

a. A cover enclosing all moving parts and electronics included in the Powerhead.

b A Powerhead containing the gear motor, motor brake, Load Brake, limit switches, operating electronics, load sensor, slack line detector and wire rope.

c A Compression Tube/Beam Clamp structure which prevents any additional lateral forces transferring to the building. Hoists or hoisting systems that impose additional lateral load on the building structure shall not be acceptable for this project

d. The Powerhead shall incorporate a built-in load cell that reports the load profile to the QuickTouch controller and provides an alert in the event of an underload/overload condition.

e The Powerhead shall incorporate a built-in slack line sensor that reports a slack line condition to the QuickTouch controller

f The Powerhead shall incorporate the emergency contactor

g. The Powerhead shall incorporate the following local controls

1) Limit Switch setting devices
2) Up/Down operational switch
3) LED indicators for Power, Communication, Activation and Fault status
4) Limit Switch Status

6 The hoist shall be manufactured from UL Listed components and shall be UL Listed and tested as a complete system (not just UL listed parts).

B. POWERHEAD

1. The Powerhead shall be a fully enclosed sheet metal housing that shall prevent contact with moving and electrical parts and shall provide protection against dirt, dust and debris collecting on the operating parts of the machine, the electrical and electronic components and the wire rope lift lines on the cable drum

2 The Powerhead housing shall be fabricated from powder coated sheet metal It shall be punched and formed to enclose and support the gear motor, motor brake, Load Brake, limit switch assembly, limit switch adjustment system, reversing contactor, emergency contactor, wire rope drum, wire rope (cable) keeper, load cell, slack line detector and motor electronics

3. The rear hinged cover of the Powerhead shall support connectors, switches and LED lights for the following functions: local operating switch, power cable and control connector outlet, indicator lights for operating mode, limit switch indicator, limit switch override buttons, indicators for power, status and communication. Each of these functions shall be clearly labeled to identify their purpose.

C. GEARMOTOR AND MOTOR BRAKE

1. The gear motor and motor brake shall be an integral unit from a single manufacturer It shall operate on 208 volt, 60 Hz, 3 phase power.

2 The gear motor shall operate the hoist at a fixed speed, yielding a line speed averaging 30 feet per minute.

3 The gear motor shall drive a monolithic double output shaft that extends from each side of the gearbox through the support bearings without couplings.

4. The integral motor brake shall be spring applied and electrically released

5. The motor brake shall be capable of holding a minimum of 150% of the motor full load torque

D. LOAD BRAKE

1 The rotary disk Load Brake is a mechanical system not dependent upon electrical energy to engage or disengage. The Load Brake shall bring the moving load to a complete stop and shall hold the load in position under normal operating conditions In the event of a mechanical failure of the motor, motor brake or gearbox the Load Brake shall bring the moving load to a complete stop and shall hold the load in position.

2 The Load Brake shall be mounted on the same shaft as the Prodigy Hybrid Drum™.

3. The Load Brake shall be mechanically released to impose only minimal force when the load is moving in the up direction. The Load Brake shall always be engaged when the load has stopped moving either up or down. When lowering the load the Load Brake shall partially disengage to allow movement but sufficient force shall be maintained to control the descending load. In the absence of rotational torque on the gearbox, the Load Brake shall not release.

E. WIRE ROPE DRUM.

1 The Prodigy Hybrid Drum™ shall allow the lift lines to be wrapped in a compact manner that prevents wire rope damage.

2. The Prodigy Hybrid Drum shall be mounted on the motor shaft on the side of the gearbox opposite the Load Brake Up to eight 3/16" dia. 7 x 19 wire ropes, ASTM Specification 81023/A1023M-02, commonly referred to as galvanized aircraft cable, shall be wrapped on that drum

3 No wire ropes shall cross over other wire ropes, nor lie vertically on top of another wire rope nor be allowed to stack in a single pile as on a yoyo drum.

4. The drum shall have been tested for wear, durability, strength, service and integrity by an independent testing lab. Testing certificates shall be available at ETC for review

5 The sloped drum shall be capable of safely wrapping up to 50'-0" of eight 3/16" diameter wire rope lift lines.

6. A wire rope (cable) keeper shall assure that the lift lines wrap appropriately on the drum without crossing over, slack or stacking.

F LIMIT SWITCH

1. The limit switch assembly shall be mounted within the Powerhead. The limit switch shall establish firm "normal" end of travel limits and firm over-travel limits for movement in either direction In addition, software shall establish resettable "normal up" and "normal down" end of travel limits, typically redundant for the normal end of travel limits. This combination of firm limits and soft limits shall provide each hoist with a total of three "up" and three "down" limits to assure that the hoist does not exceed the maximum allowable travel in either direction

2 The position information for the hoist and the soft limits shall originate from absolute position sensors. Any system utilizing relative position sensors (e g incremental encoders) shall not be acceptable.

3. A requirement to "re-home" to "zero out" the encoders after power loss or power disconnect shall not be acceptable.

4 The firm end of travel limits shall be set or adjusted at the time of installation via a screw adjustment on the bottom of the Powerhead cover; these screw adjusters shall be protected by a removable cover.

5. Three indicator lights shall be located on the bottom panel of the Powerhead cover next to the limit switch adjustment screws. When the batten is positioned at low trim the green indicator light shall illuminate when the limit switch setting screw is adjusted to the current position of low end of travel. When the batten is positioned at high trim the blue indicator light shall illuminate when the setting screw is adjusted to the current batten position. In the event that a batten overtravels, a red indicator light is illuminated to indicate this condition

6 Any system that indicates that the limit has been set by audible or tactile means only shall not be acceptable.

7. By removing a protective cover at the rear of the Powerhead, it shall be possible to temporarily override the limit switches to permit testing the overtravel limit switches. It shall also be possible to temporarily override the overtravel limit switches to escape an overtravel limit condition without having to change the limit position setting. A system that allows permanent override of any limit switch or that relies on jumper wire to override the limit switches shall not be acceptable.

8. An actuation of the override buttons shall be automatically logged by the controls system with a date and time stamp of this action.

G LOAD SENSOR/LOAD PROFILING.

1. A load sensor shall be built into the Powerhead.

2. It shall be possible to create a profile of the actual load on the hoist as it travels through its normal cycle by turning a key switch at the controller to "learn" and then running the hoist through its entire travel cycle.

3. The profile may be changed by "re-training" the Load Profiling system whenever the suspended load is changed on the batten by activating a key-switch-operated training cycle located on the QuickTouch control panel. The system will perform a "quick learn" cycle to establish the new load profile. (It shall not be necessary to run the hoist through its entire travel cycle to update the system via quick learn.)

4 When the load profile key is turned to "on" the load sensor shall continuously monitor the load and report it to the Quicktouch Controller where it shall be indicated in the LCD display

5 In the event of a load in excess or less than the anticipated value at any time during the operating cycle, the load profiling system via the QuickTouch controller shall shut the system off and indicate a fault.

H SLACK LINE DETECTOR

1. A slack line detector shall be built into the hoist. When a slack line condition develops, the slack line detector shall prevent hoist movement downward. Slack line sensor circuitry and movement prevention shall be executed via hardware. A software-only solution for this function shall not be acceptable. The slack line detector shall report slack line conditions to the QuickTouch Controller where a fault condition shall be noted in the LCD display.

I. CABLE MANAGEMENT

1. The load circuits and control wiring shall be fed to the hoist by a built-in Cable Management System that allows the flat feeder cable to fold and store along the top of the connector strip.

2. At high trim, the entire system shall be stored in no more than 30" of vertical space from the bottom of the mounting steel to the horizontal centerline of the batten

3. The Cable Management system shall be integral to the hoist system

4. Cable Management systems requiring a greater vertical storage space shall not be acceptable for this project.

5. Hoisting systems utilizing Cable Management systems from third-party vendors shall not be acceptable for this installation

J. COMPRESSION TUBE AND BEAM CLAMPS

1. The Compression Tube shall be a continuous channel of extruded aluminum engineered to support the vertical and horizontal loads imposed on it with a 10:1 design factor. The Compression Tube shall be engineered so as not to add horizontal forces on the building when used in combination with the slip fit beam clamps.

2. The Compression Tube shall support the loftblocks mounted within the spacing limits of the system

3. Compression Tube sections shall be joined into a continuous assembly by a pair of dedicated splicing plates at each Compression Tube joint

4. The Compression Tube shall be installed only by means of dedicated beam clamps that allow the Compression Tube to snap-into place and move horizontally to neutralize additional lateral forces so they are not imposed on the building structure.

5 Beam clamps may be placed up to 14'-0" on center. Beam clamps shall be capable of attaching to horizontal beams, joist flanges or flat steel plates measuring from .25" thick up to 1" thick and from 4 25" wide up to 14" wide so long as they are sufficient to support the imposed loads

6. Hoist systems that add lateral forces to the building shall not be accepted for this project

7. The compression tube shall permit positioning of loftblocks anywhere along its length.

K LOFT BLOCKS

1. Each loft block shall be an assembly of steel side plates, a wire rope idler, sheave support hardware and an assembly to prevent the loft block from sliding horizontally. Each loft block shall be inserted into the slot on the bottom of the Compression Tube.

2 Loft block sheaves shall measure 5.25" in diameter and contain a pair of press fit sealed ball bearings. Lift lines shall travel in a groove shaped and sized for 3/16" diameter wire rope per the latest edition of the Wire Rope Users' Manual as published by the Wire Rope Technical Board. The loft block sheave shall be concentric about the hub and shall be evenly balanced for ease of rotation.

3. An idler shall be incorporated into the top assembly of the loft block to guide and support lift lines as they pass through the loft block.

4. Hoisting systems requiring the loft blocks to be mounted directly to the facility steel shall not be accepted for this project.

L. RACEWAY/DISTRIBUTION CHANNEL HANGERS

1. Raceway hangers shall support the wire rope termination hardware and secure the raceway and the pipe batten.

2 Hangers shall be engineered to support the raceway and fully loaded pipe batten without distortion within the limitations of the hoist .

M LIFT LINE TERMINATIONS

1. Each lift line shall be terminated at the factory to a hardened steel rod inside the drum at the Powerhead.

2. Lift lines shall be terminated at the load hanger with a low profile Right Angle Cable Adjuster (RACA™), standard thimble and copper oval compression sleeve. The RACA and cable terminations shall be installed at the time of hoist installation.

3. The batten trim shall be adjustable up to 6" via the RACA.

4 Systems utilizing turnbuckles or chain to trim the batten shall not be accepted for this installation.

N CONNECTOR STRIP--DISTRO

1. Power to the connector strip shall be fed via flat cable especially designed and fabricated for this system.

2 The flat cable shall include one ground wire and one data cable plus an individually insulated hot and an individually insulated neutral conductor for each of six 120 volt circuits.

3. The connector strip shall be built to the length specified with outlets or pigtails located as specified or as shown on the construction drawings

4. The flat cable shall pass through a strain relief and enter a terminal box at the designated end of the raceway. Within the raceway all wiring shall be installed and terminated at the factory. Field wiring t the raceway shall not be permitted for this equipment. The wiring and all components shall meet UL requirements and appropriate National Electrical Codes (NEC).

O PIPE BATTEN

1. The pipe batten shall be I ½" (nom.) diameter schedule 40 grade A, seamless pipe fabricated in the largest possible lengths without splices, typically 21'-0" long Battens longer than a single length of pipe length shall be spliced by means of 120 x 1 9/16 dia. DOM tube 18" long with 9" of tube inserted into each half of the splice

2. The tight fitting splice tube shall be held in place by a pair of 3/8 x 2 ½" grade 5 hex bolts on each side of the joint. The bolts shall pass through the pipe at an angle of 90° to each other There shall be two bolts on each side of the joint spaced 1" and 7" from the joint Alternatively, one pair of bolts on one side of the joint may be replaced with either plug welds or tight fitting steel rivets.

3 Pipes shall be straight and painted flat black.

4 A safety-yellow vinyl batten cap with the Prodigy logo shall be installed at each end of each pipe batten.

5 A pair of load labels shall be provided for each system. The labels shall have spaces to indicate Working Load Limit, Point Load at lift line, Point Load between lift lines and maximum uniform distributed load (UDL).

P. POWER AND CONTROL DISTRIBUTION

1. Each hoist shall be connected to electrical power via an 8'-0" long cable extending from the rear of the Powerhead to the source outlet in the Power and Control Distribution box or trough.

2. The control circuit shall be attached to the Powerhead via a separate control wire that is also 8'-0" long and shall be connected to the Powerhead via a Circular Pin Connector at the Powerhead and at the Power and Control Distribution box or trough

3. The receptacles shall be installed in a sheet metal junction box and shall include a power and control outlet

4. The distribution box shall include an 8 amp 3 phase motor rated breaker

5. The wiring and connectors shall be barriered between high and low voltage.

6 The Power and Control Distribution box shall be UL listed for this application

7 Control wiring terminations shall be made via an IDC style connector

8 Hoists shall connect to the control panel via a single CAT-5e style cable.

9 The Control Panel shall operate on low voltage power supplied via the control cable that connects the control circuit to the power and control distribution box

10. A centralized contactor cabinet with individual multiple wires connecting to each hoist shall not be acceptable for this installation

QUICKTOUCH CONTROL SYSTEM

Q. GENERAL

1 The entire hoisting system shall be operated by an Electronic Theatre Controls (ETC) QuickTouch™ fixed speed controller It shall be purpose-designed and fabricated to manage and operate hoists specifically designed for overhead lifting The System shall incorporate mechanical, electrical and safety features that shall be inherent to this equipment and shall provide an engineered, efficient device to control the equipment. The mechanical, electrical and safety features of this control system shall establish the standard of quality, performance and safety by which hoisting systems of other manufacture shall be evaluated.

2. The QuickTouch Control System shall consist of a surface mounted primary control panel and up to three external remote E-stop stations

3. QuickTouch Control Stations:
   a. Four Channel Controller
   b. External Emergency Stop Stations

4. <u>Provide one surface mount 4 Channel Controller and 3 surface mount External Emergency Stop Stations</u>.

5 The controller shall include the following features:

a. Key operated enable switch

b. LCD display with feedback/operating information

c. Key operated hoist load profile training/enable switch

d Hoist selection buttons with rear illuminated naming tabs

e. Rear illuminated hold-to-operate (deadman) up and down operation buttons

f. Dedicated E-stop button

g Outlet for wired remote

h. Optional door

i. Optional rack mount kit

j. USB port for configuration and service purposes

6. The controller shall be UL Listed and shall be fabricated from UL Listed components

7 The Emergency Stop and Hold-To-Run (Deadman) signals between the control station and the hoists shall be hard wired 24 Volt signals. System that rely on software and bus communications to transmit any of these signals shall not be acceptable

R ENCLOSURE

1. The back box and face panel shall be fabricated from 16ga powder coated sheet steel specially formed to provide support for installation as well as all components installed within the housing

2. The QuickTouch face panel shall be printed with complete labeling information to identify the function of each of the buttons in the control station.

3. The face panel shall identify the system as a QuickTouch controller for stage rigging

4. The face panel shall be shades of grey. The ring surrounding the E-stop button shall be safety yellow and shall be rear illuminated

5 The face panel shall be removable The steel panel to which all switches are mounted shall be removable via screws in the surface located underneath the face panel

6. The flush mount control station shall be mountable in a standard 2 x 4 stud wall with no protrusions beyond that surface.

7. A optional rack mountable control station shall be available in each size controller.

8. An optional lockable cover shall be available for the control station.

S LCD SCREEN

1. The graphic LCD screen shall be full graphics type to communicate all information in human readable text and symbols

2 The display shall be rear illuminated All intensities of all indicator lights shall be dimmable.

3. Upon completion of the startup sequence the display shall indicate that the system is "OK" or shall provide specific information should a fault occur. Fault conditions shall be reported in human readable text. Any system that reports fault conditions in a pattern of illuminated lights or a series of blinking lights shall not be acceptable for this installation.

4. Readout language may be selected to be English, Spanish, French or German

5. When a hoist is selected the LCD screen shall readout the hoist name or number, its current position above the floor, the amount of weight suspended from the batten, preset position recorded, as well as a bar graph scale that shows the current position of the hoist, the preset position and the current weight suspended by the hoist

T. HOIST SELECTION/OPERATION BUTTONS

1. There shall be 4 hoist selection buttons.

2. Each hoist selection button shall have an illuminated field above it.

3. It shall be possible to custom label the illuminated fields

4. The color of the illumination shall be full RBG and shall change color depending on the status of the hoist.

5. When a hoist is selected the field shall be rear illuminated. The field shall remain illuminated until it is de-selected.

6. In standard configuration, up to four hoists may be selected to move at one time.

   a. This value may be adjusted at the factory from one up to eight hoists for concurrent operation. This value shall be established in these specifications within these stated limits

   b. The limitation of the number of moving hoists shall be accomplished by simple electrical hardware. A solution that relies on software for this limitation shall not be acceptable.

7. When the up or down button is pushed and held each hoist shall move to its next stop location in the selected direction of movement. If the stop location is the adjustable preset, the hoist can be made to continue to travel in the selected direction by releasing and re-pressing the up or down hold-to-operate button until the next stop for the hoist(s) is reached.

8. Only _____ hoists may move at one time and they may only move in one direction at a time.

U. KEY SWITCHES

1. A key switch shall enable the control system. The key must be in the lock and turned to the on position for the hoisting system to operate

2. A separate key is required to change the load profile. That key must be in the lock and turned to the "ON/OFF" position to enable/disable Load Profiling

3. When Load Profiling is turned on the hoist shall know the amount of weight that is supposed to be supported by the batten at any location in the path of travel Should the weight exceed significantly or be less than the profiled weight, the hoist shall stop movement in the down direction for underload conditions or in the up direction for overload conditions

V. SLACK LINE DETECTOR

1. The slack line detector is located in the Powerhead. When a slack line condition occurs, further downward travel is prohibited, although the hoist will allow movement in the upper direction. The condition will result in a fault message on the LCD screen on the controller

W. E-STOP

1. The E-stop button on the QuickTouch controller shall be a mushroom button with a rear illuminated ring surrounding the button. During normal operation the E-stop button shall be in the out position. An E-stop can be activated via this button by firmly pressing the button in. The button shall latch and immediately cause all hoists in the system to stop motion. The LCD screen shall report the E-stop as an E-stop fault.

2. To continue system operation the E-stop button must be cleared where it was pressed by twisting the button to release the latch and the E-stop must be must be acknowledged at the control station before any new movement can occur.

3. An acknowledgement of the E-stop condition shall initiate an automatic self test of the system safety functions including safe opening of all E-stop contactors.

4. The illuminated ring around the E-stop button shall change intensity depending on whether the system is moving or not. The transition between low and high intensity shall be a smooth fade. The intensity levels shall be adjustable at the time of installation or service.

5. The illuminated ring around the E-stop button shall blink in case of an E-stop condition

6. In addition to the E-stop station at the main control panel, up to three external E-stop stations may be connected to the system. Each external E-stop station shall operate in the same way as the primary E-stop at the QuickTouch control panel.

7. The E-stop system shall be completely hard-wired. A system that relies on software or bus system to transmit E-stop signals shall not be acceptable for this installation

8. The E-stop signal shall be provided in parallel to all E-stop contactors in the hoists A single E-stop contactor failure shall only affect a single hoist.

9. Serial wiring of the E-Stop signal from hoist to hoist shall not be acceptable.

X. SYSTEM DIAGNOSTICS

1. Upon energization the control system automatically shall perform a series of diagnostic tests that shall assure that all system safety functions are working. Should an error in the safety functions be determined the controller shall report back a fault condition in the LCD display window and shall identify the nature of the fault.

2. Should the controller be continuously energized, the system automatically shall perform a series of diagnostic tests every 30 days to determine if there are any problems with any portion of the hoisting control system safety features. In the event of a problem, the controller shall report back a fault condition in the LCD display window and shall identify the nature of the fault.

3 The automatic self tests shall include a complete test of all Emergency Stop contactors for their respective ability to reach the off state

4 Eleven months after a system inspection has been performed, the system shall remind the user to schedule full system maintenance/inspection The reminder shall remain visible in the system until it is turned off by the factory authorized and trained inspector.

5. The system inspection reminder shall show the number of days remaining until the system inspection, or the number of days the inspection is overdue.

6. A failure of the Load Cell, Encoders or a wiring issue shall be automatically detected during machine standstill and motion These faults shall be displayed on the control station in text format

7 Motor over-temperature shall be detected and shall stop the motor. This fault shall be displayed on the control station in text format.

8. The motor direction shall be detected and the system shall automatically be stopped if the command direction differs from the actual movement direction and shall be reported as a fault in text format on the control station

9. A failure of the chain between the drum and the limits shall create a fault condition and stop the motor. This fault shall be displayed on the control station in text format

Y MONITORING AND HOIST HISTORY

1 The system shall automatically keep track of system and hoist history.

2. Each fault condition shall be logged with a time and date stamp. Logging of the hoist events shall continue to function while the main control station is turned off or while the hoist is not connected to the rest of the system.

3. The control system shall keep a record of the distance traveled and peak load for each hoist. There shall be separate entries of this data for "Since the last inspection" and "Since time of manufacture "

4 The data shall be accessible during inspection It shall be downloadable in an Excel readable file format

Z CONFIGURATION

1. The system shall provide a USB port that allows connection to a computer with configuration, maintenance, inspection and monitoring software

2. It shall be possible to configure all hoist functions through the control system at the control panel. A system that requires a laptop directly connected to the hoist shall not be acceptable for this installation.

3 The configuration software shall allow easy and simple configuration of the system by factory trained and authorized installers

4. Software shall allow easy and quick annual inspection of the control system functions by a factory trained and authorized inspector.

   a. The inspection software shall automatically provide inspection relevant data to the inspector, such as peak load and travel distance.

   b. The software shall guide the inspector through a number of inspection tasks

   c. The software shall automatically recognize safety relevant signals (E-stop, Limit Switches).

5. The inspection software shall automatically fill in an inspection report and generate a pdf file.

6 The inspection report shall include a 2d barcode that encodes a copy of the inspection data and a checksum that can be utilized to validate the inspection report.

Part 3. Execution

INSTALLATION

A Installation of this equipment shall only be performed by ETC approved and factory trained theatrical rigging installers. Installation shall be performed in a workmanlike manner and shall strictly adhere to the standards of these specifications and ETC's installation requirements. Where necessary, the installer may make adjustments to accommodate unforeseen impediments to installation. The completed work must achieve all functional, electrical, safety and appearance requirements as established in these specifications.

B. Work shall be performed in accordance with OSHA and local codes

C On site welding shall only be performed per current AWS D1.1 standards and with advanced approval from the architect or Owner's representative.

DIVISION OF RESPONSIBILITIES

D. The RIGGING contractor shall be responsible for providing and installing:

1 Powerhead

2 Supplementary steel and/or mounting adapters for the hoisting systems, if required

3. Compression Tube beam clamps

4. Compression Tube and Compression Tube splices

5. Loft blocks

6. Wire rope lift lines and terminations

7 Cable Management system

8. Factory prewired electrical termination boxes that are part of the cable management system.

9. Factory prewired distribution raceway mounted at the bottom of the wire rope on the stage electrics sets

10 Pipe batten attached to RACAs or Hanger Brackets

11. Batten end caps

12 Batten labels

13. Attachment of the prewired twist-lock connector to the Power and Control Distribution outlet

14. Attachment of the prewired circular pin connector data wire to the mating outlet on the Powerhead and on the Power and Control Distribution box

15. Termination of the low voltage data wiring at the controller, at all power and control distribution boxes and at each E-stop station

16 Face plates for all Control Stations, E-stop Stations and Power and Control Distribution Boxes

E. The ELECTRICAL contractor shall be responsible for providing and installing:

1. Back boxes for all Power and Control Distribution Boxes, Control Stations and all E-Stop Stations.

2 All pipe, wiring and termination providing line voltage to all the Power and Control Distribution boxes

3. All pipe and wiring providing data to all the Power and Control Distribution boxes; terminations by the rigging contractor

4 All pipe and wiring connecting data lines between the first Power and Control Distribution Box and the Control station; terminations by the rigging contractor

5. Pipe and wiring connecting data lines between Control Station and first E-Stop Station; terminations by the rigging contractor

6 All pipe and wiring connecting data lines between all E-Stop Stations; terminations by the rigging contractor

7. All pipe and wiring and all terminations of line voltage of dimmed and non-dimmed circuits that terminate at the termination boxes mounted on the Compression Tube

Part 4. Bill of Materials

QTY.	PART NUMBER	DESCRIPTION	MANUFACTURER
1	PE1000E	P1000E ETC PROIGY FIXED SPEED HOIST W/43' CONNECTOR STRIP W/ 24 GPC OUTLETS WIRED ON (24)20A CIRCUITS, (3) DMX OUTPUTS & (1) ETHERNET PORT.	ETC
1	PIPE	PIPE BATTEN FOR PE1000	N/A
1	QT4	QUICK TOUCH 4 CHANNEL CONTROLER W/BACKBOX W/SURFACE MOUNT BACKBOX	ETC
3	ESBS	EMERGENCY STOP BUTTON STATION W/SURFACE MOUNT BACKBOX	ETC
1		THREE (3) YEARLY INSPECTIONS OF THE PRODIGY HOIST SYSTEM	